CLAIMS

What is claimed is:

1. A catalyst prepared by:

providing a zeolite carrier;

providing a cupric salt aqueous solution; and

defining a copper zeolite catalyst by carrying out an ion exchange reaction between copper ions and said zeolite carrier in said cupric salt aqueous solution at a temperature of from about 4°C to about 25°C.

2. The catalyst of claim 1 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

3. The catalyst of claim 1 wherein said copper zeolite catalyst comprises a copper content of from about 0.1% to about 10.0% by weight.

4. The catalyst of claim 3 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

5. The catalyst of claim 1 wherein said defining a copper zeolite catalyst further comprises the step of calcining said copper zeolite catalyst at a temperature of from about 300°C to about 700°C.

6. The catalyst of claim 5 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

7. The catalyst of claim 5 wherein said copper zeolite catalyst comprises a copper content of from about 0.1% to about 10.0% by weight.

8. The catalyst of claim 7 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

9. A catalyst prepared by:

providing a zeolite carrier having a silicon/aluminum mole ratio of from about 14 to about 30;

providing a cupric salt aqueous solution having a concentration of from about 0.001 molar to about 10 molar;

defining a copper zeolite catalyst by carrying out an ion exchange reaction between copper ions and said zeolite carrier in said cupric salt aqueous solution at a temperature of from about 4°C to about 25°C; and

calcinating said copper zeolite catalyst at a temperature of from about 300°C to about 700°C.

10. The catalyst of claim 9 wherein said cupric salt aqueous solution is copper sulfate, copper nitrate, copper acetate or copper chloride.

11. The catalyst of claim 9 wherein said copper zeolite catalyst comprises a copper content of from about 2.5% to about 3.5% by weight.

12. A process for preparing a catalyst, comprising the steps of:

providing a zeolite carrier;

providing a cupric salt aqueous solution;

defining a copper zeolite catalyst by carrying out an ion exchange reaction between copper ions and said zeolite carrier in said cupric salt aqueous solution at a temperature of from about 4°C to about 25°C; and

calcinating said copper zeolite catalyst.

13. The process of claim 12 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

14. The process of claim 12 wherein said copper zeolite catalyst comprises a copper content of from about 0.1% to about 10.0% by weight.

15. The process of claim 14 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

16. The process of claim 12 wherein said calcining said copper zeolite catalyst comprises calcining said copper zeolite catalyst at a temperature of from about 300°C to about 700°C.

17. The process of claim 16 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

18. The process of claim 16 wherein said copper zeolite catalyst comprises a copper content of from about 0.1% to about 10.0% by weight.

19. The process of claim 12 wherein said cupric salt aqueous

solution is copper sulfate, copper nitrate, copper acetate or copper chloride having a concentration of from about 0.001 molar to about 10 molar.

20. The process of claim 19 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

21. The process of claim 19 wherein said calcining said copper zeolite catalyst comprises calcining said copper zeolite catalyst at a temperature of from about 300°C to about 700°C.

22. A process for removing nitrogen oxides from a gaseous medium, comprising the steps of:

providing a catalyst prepared by providing a cupric salt aqeous solution, providing a zeolite carrier, and causing an ion exchange reaction between copper ions and said zeolite carrier in said cupric salt aqueous solution at a temperature of from about 4°C to about 25°C;

defining a gaseous mixture by providing a reducing agent and mixing said reducing agent with said gaseous medium; and

passing said gaseous mixture through said catalyst.

23. The process of claim 22 wherein said reducing agent is ammonia or urea.

24. The process of claim 22 wherein said cupric salt aqueous solution is copper sulfate, copper nitrate, copper acetate or copper chloride having a concentration of from about 0.001 molar to about 10 molar.

25. The process of claim 22 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 95.

26. The process of claim 22 wherein said catalyst has a copper content of from about 0.1% to about 10.0% by weight.

27. The process of claim 22 wherein said catalyst is prepared by further calcining said catalyst at a temperature of from about 300°C to about 700°C.

28. The process of claim 22 wherein said passing said gaseous mixture through said catalyst comprises passing said gaseous mixture through said catalyst at a temperature of from about 150°C to about 500°C and a spatial velocity of from about 1000 hr^{-1} to about 400,000 hr^{-1}.

29. A copper zeolite catalyst comprising:

a zeolite carrier having a silicon/aluminum mole ratio of from about 14 to about 95; and

copper provided on said zeolite carrier in a quantity of from about 0.1% to about 10.0% by weight.

30. The copper zeolite catalyst of claim 29 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 30.

31. The copper zeolite catalyst of claim 29 wherein said copper is provided on said zeolite carrier in a quantity of from about 2.5% to about 3.5% by weight.

32. The copper zeolite catalyst of claim 31 wherein said zeolite carrier has a silicon/aluminum mole ratio of from about 14 to about 30.

33. A zeolite carrier comprising a silicon/aluminum mole ratio of from about 14 to about 95.

34. The zeolite carrier of claim 33 wherein said silicon/ aluminum mole ratio is from about 14 to about 30.